

In the Abstract:

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**ABSTRACT**

~~The present invention relates to a~~ A light-waveform measuring device and its measuring method, ~~include a complex-refractive-index measuring device and its measuring method,~~ and a computer-program recording medium having programs for the same stored therein. ~~It is an object of the present invention to measure a~~ An electric field of an electromagnetic wave, in a light region having wavelengths smaller than those of electromagnetic waves in a near-infrared region, is measured, and ~~output time-varying waveforms thereof are outputted.~~ It is also an object of the present invention to enable easily obtaining a complex refractive index of a material, on the basis of the result of measurement of the electric field waveform of light. ~~The present invention comprises~~ g Gate-pulse-light generating means, measurement-light generating means and light-detecting means for detecting measurement light, are included, ~~wherein both of gate pulse light and measurement light are coherent lights,~~ t The measurement light is coherent light having a wavelength smaller than those of a near-infrared region, f The gate pulse light is coherent light with ~~has~~ a pulse width smaller than a period of the measurement light, the measurement light and the gate pulse light are directed to the light detecting means to generate carriers therein, a A physical quantity, based on the carriers generated from the measurement light and the gate pulse light is measured, and an electric field of the measurement light is measured on the basis of the physical quantity.